



**Pilot operated Check valve sandwich plate Type Z2S**

RE 21600/12.2004

size 6, 10  
16, 22

up to 31.5 MPa

up to 360L/min

Replace: 21547/05.2001  
21551/05.2001  
RE: 21556/05.2001  
21560/05.2001

**Features:**

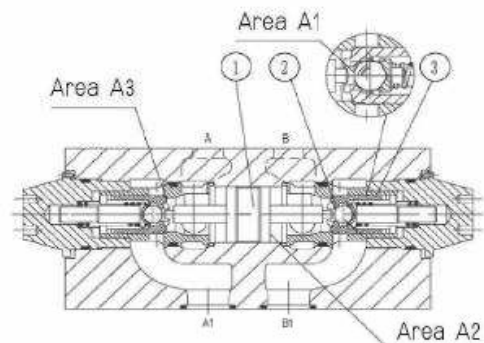
- For the leak free closure of one or two service ports
- Mounting pattern to DIN 24 340 form A, ISO 4401 and ETOP-RP 121H for use in vertical stacking assemblies



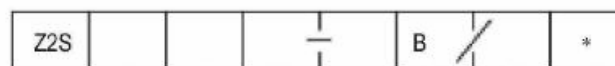
**Functional, section**

Hydraulic pilot operated check valves type Z2S are of sandwich plate design. They are used for the leak-free closure of one or two service ports, even for long periods of time. Free flow occurs from A1 to A2 or B1 to B2. Flow in the opposite direction is blocked.

In order to ensure correct closing of the valve, the service ports of the directional valve must be connected to tank in the neutral position.



**Ordering details**

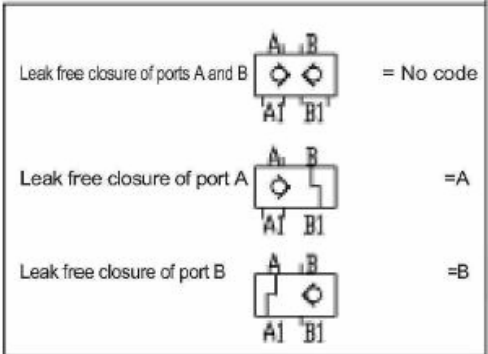


|         |      |
|---------|------|
| Size 6  | = 6  |
| Size 10 | = 10 |
| Size 16 | = 16 |
| Size 22 | = 22 |

Further details in clear text

No code = Mineral oils

V = Phosphate ester



20 = Series 20 to 29 (Apply to size 10)  
(20 to 29: unchanged installation and connection dimensions)

30 = Series 30 to 39 (Apply to size 16, 22)  
(30 to 39: unchanged installation and connection dimensions)

40 = Series 40 to 49 (Apply to size 6)  
(40 to 49: unchanged installation and connection dimensions)

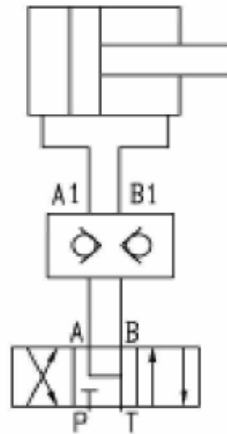
(only for size 10)

1= Cracking pressure 0.15 MPa

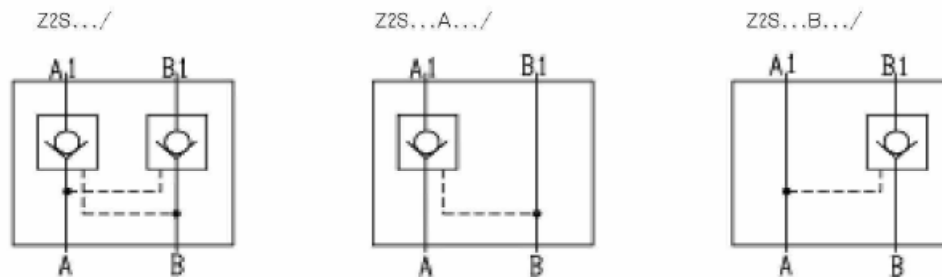
2= Cracking pressure 0.3 MPa

3= Cracking pressure 0.6 MPa

## Typical circuit example



## Symbols



## Technical data

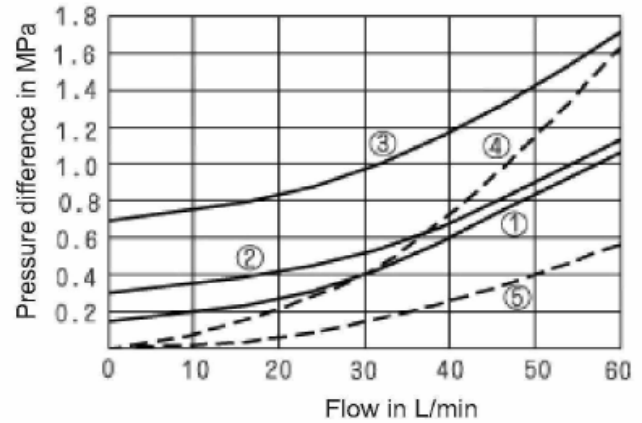
|                                       |   |                                      |                                    |                                    |
|---------------------------------------|---|--------------------------------------|------------------------------------|------------------------------------|
| Size                                  | 6   | 10                                   | 16                                 | 22                                 |
| Max. flow L/min (L/min)               | to 60   | to 120                               | to 200                             | to 360                             |
| Max. operating pressure (MPa)         | 31.5  |                                      |                                    |                                    |
| Cracking pressure (MPa)               | 0.15  | 0.15                                 | 0.3                                | 0.6                                |
| Directions                            | Flow freely via check valve from A to A1 or B to B1<br>pilot operated from B1 to B or A1 to A |                                      |                                    |                                    |
| Area ratio                            | A1/A2=1:3   | $\frac{A1/A2=1:2.86}{A3/A2=1:11.45}$ | $\frac{A1/A2=1:11.8}{A3/A2=1:2.8}$ | $\frac{A1/A2=1:13.6}{A3/A2=1:2.8}$ |
| Pressure fluid                        | Mineral oils(for NBR seal) or phosphate ester(for FPM seal)                                   |                                      |                                    |                                    |
| Pressure fluid temperature range (°C) | -20 to +80  |                                      |                                    |                                    |
| Viscosity range [mm <sup>2</sup> /s]  | 2.8 to 500  |                                      |                                    |                                    |
| Weight (kg)                           | 0.8   | 2                                    | 7                                  | 11.7                               |

**Characteristic curves** (measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $t = 50^\circ\text{C}$ )

Type Z2S6

— = A → A1; B → B1  
 - - - = A1 → A; B1 → B

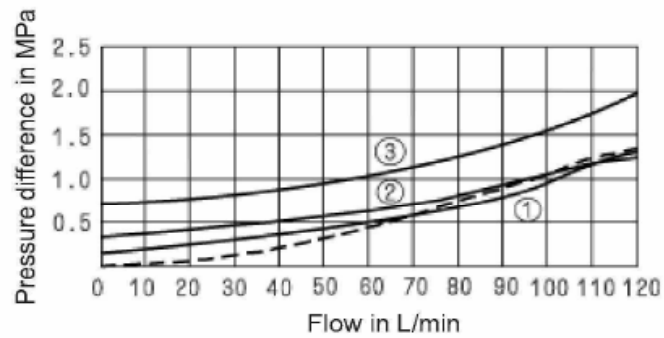
1. Normal cracking
2. Check valve cartridge
3. Flow freely  
(without check valve)
4. Through check valve cartridge
5. Flow freely  
(without check valve cartridge  
Type "A" and type "B" )



Type Z2S10

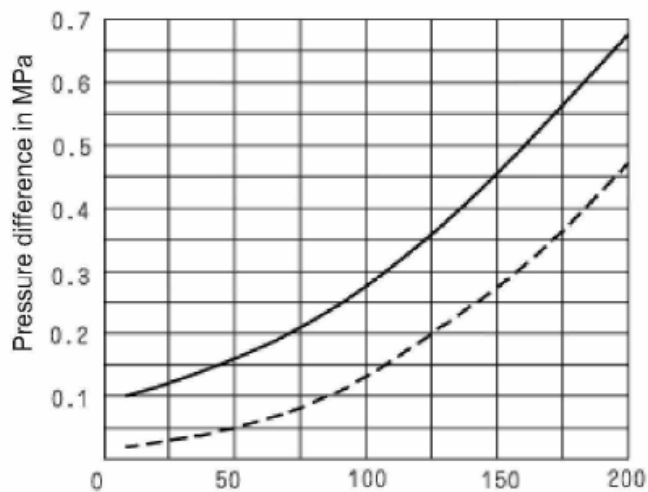
— = A → A1; B → B1  
 - - - = A1 → A; B1 → B

1. Cracking pressure 1 = 0.15MPa
2. Cracking pressure 2 = 0.3MPa
3. Cracking pressure 3 = 0.6MPa



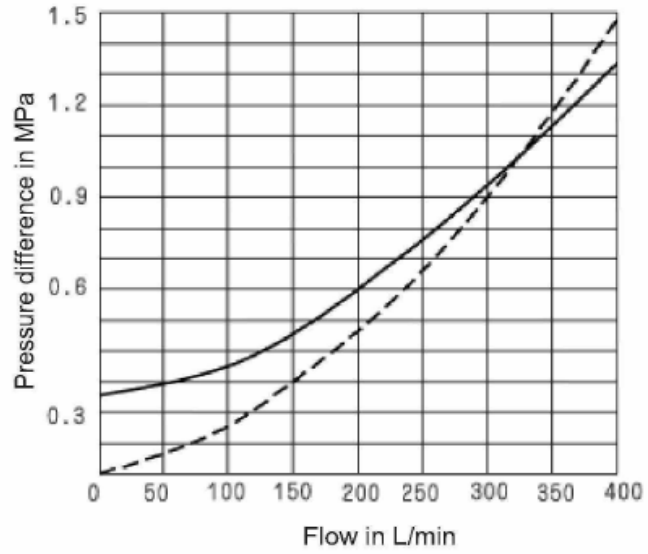
Type Z2S16

— = A → A1; B → B1  
 - - - = A1 → A; B1 → B



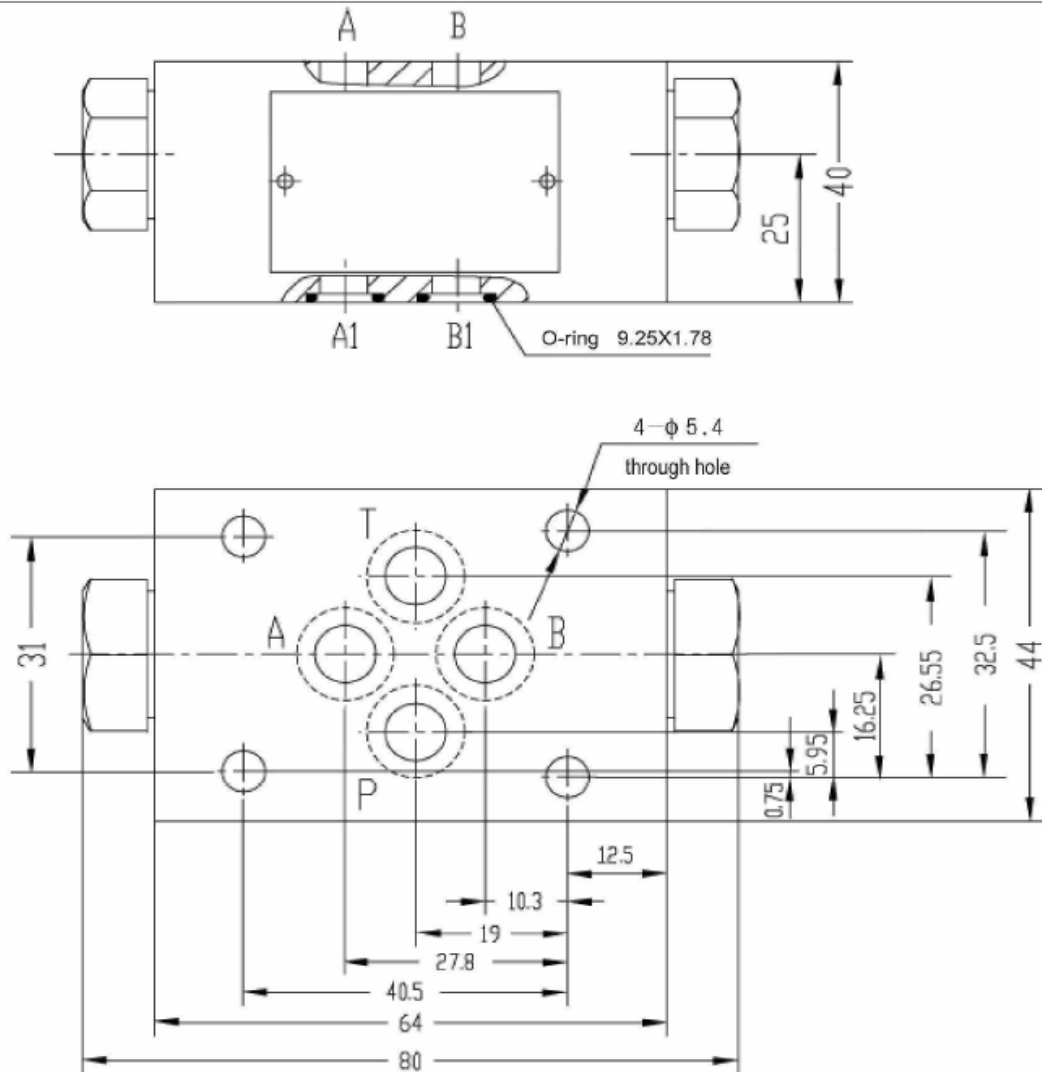
Type Z2S 22

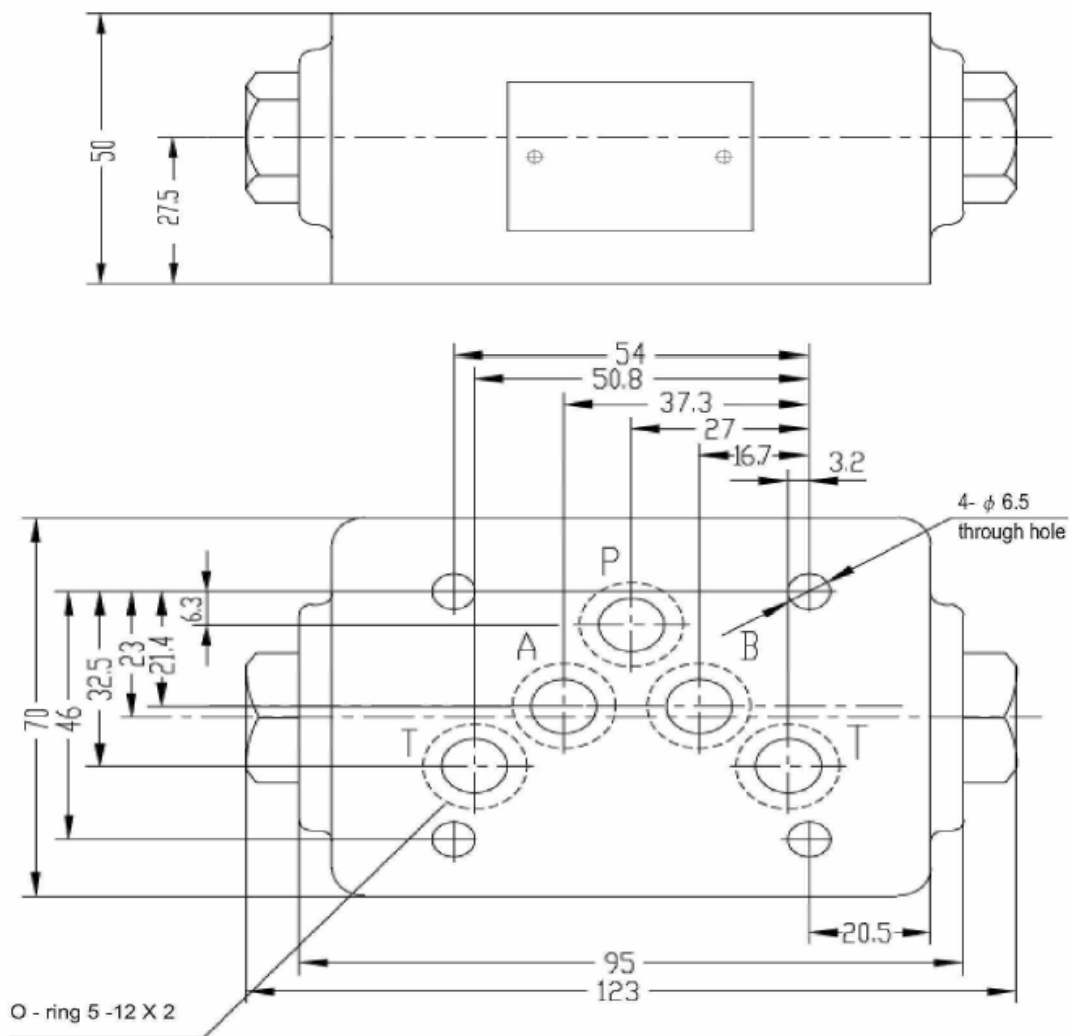
— = A → A1; B → B1  
 - - - = A1 → A; B1 → B



Unit dimensions : (Size6)

(Dimensions in mm)

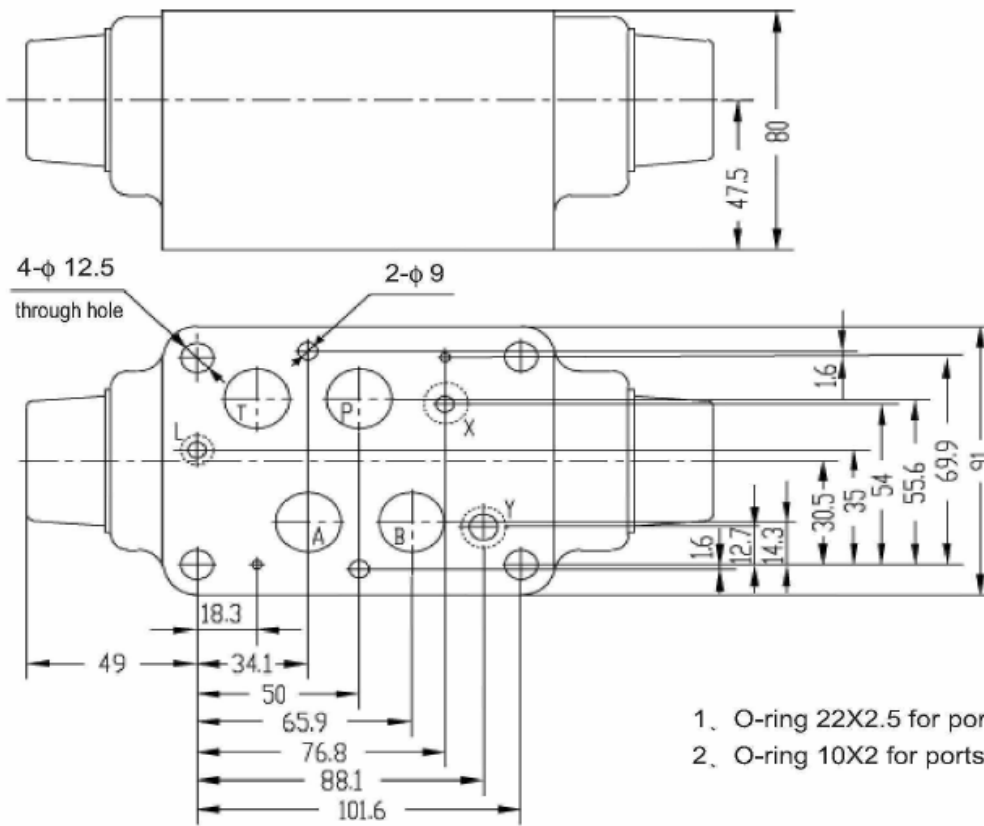




**Unit dimensions**

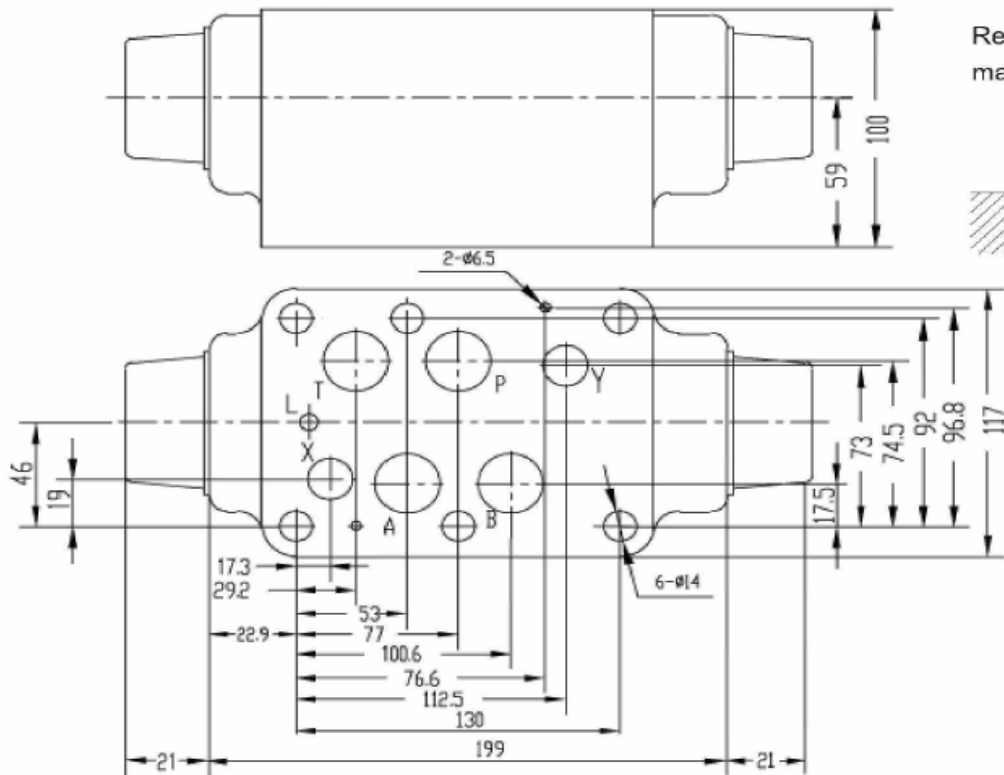
**(Dimensions in mm)**

Size16

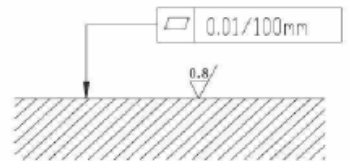


- 1, O-ring 22X2.5 for ports P, A, B, T
- 2, O-ring 10X2 for ports X, Y, L

Size22



Required surface finish of mating piece



- 1, O-ring 27X3 for ports P, A, B, T
- 2, O-ring 19X3 for ports X, Y, L

Size 6, 10  
16, 22

up to 31.5 MPa

up to 450L/min

**Features:**

- For use in vertical stacking assemblies
- For the leak free closure of one or two service ports
- Porting pattern to Din 24 340 form A, ISO 4401 and CETOP-RP 121H



**Functional, section**

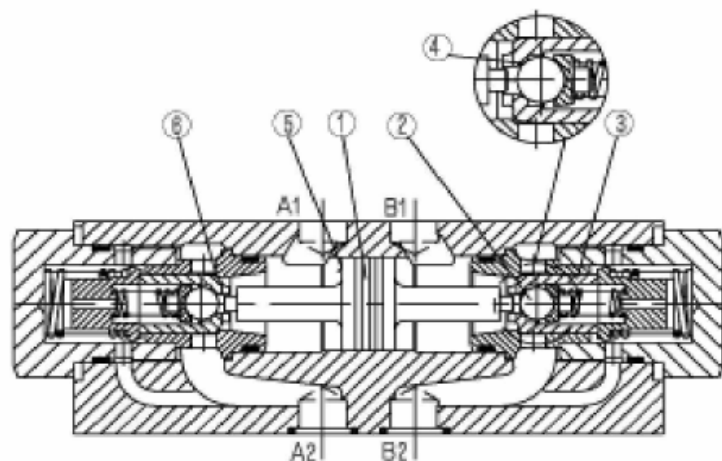
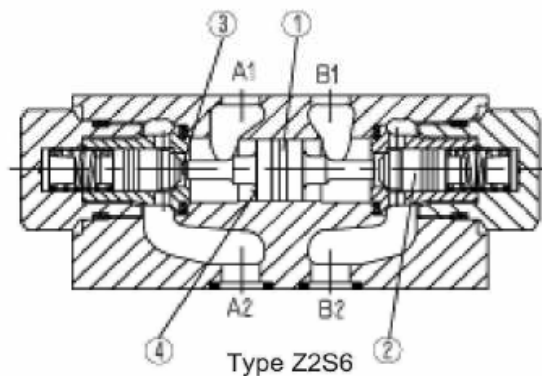
Hydraulic pilot operated check valves type Z2S are of sandwich plate design.

They are used for the leak-free closure of one or two service ports, even for long periods.

Free flow occurs from A1 to A2 or B1 to B2 the opposite direction is blocked.

When fluid flows from A1 to A2, the pressured and is pushed to the right opening the ball poppet valve (2) with the poppet (3).

In order to ensure correct closing of service ports of the directional valve closed to tank in the neutral position.



- 1 Spool
- 2 Ball poppet valve
- 3 Poppet
- 4 Area A1
- 5 Area A2
- 6 Area A3

Type Z2S10





## Technical data

|                                  |                      |   |               |              |              |
|----------------------------------|----------------------|---|---------------|--------------|--------------|
| Size                             |                      | 6   | 10            | 16           | 22           |
| Max. flow L/min                  | (L/min)              | to 60   | to 120        | to 300       | to 450       |
| Max. operating pressure          | (MPa)                | 31.5  |               |              |              |
| Cracking pressure                | (MPa)                | see curve   |               |              |              |
| Directions                       |                      | see symbols   |               |              |              |
| Area ratio                       |                      | A1/A2=1.3   | A1/A2=1:11.45 | A1/A2=1:11.8 | A1/A2=1:13.6 |
|                                  |                      |   | A3/A2=12.86   | A3/A2=12.8   | A3/A2=12.8   |
| Pressure fluid                   |                      | Mineral oils(for NBR seal) or phosphate ester(for FPM seal) |               |              |              |
| Pressure fluid temperature range | (°C)                 | -30 to +80  |               |              |              |
| Viscosity range                  | (mm <sup>2</sup> /s) | 2.8 to 500  |               |              |              |
| Weight                           | (kg)                 | approx. 0.8   | approx. 3     | approx. 6.5  | approx. 12   |

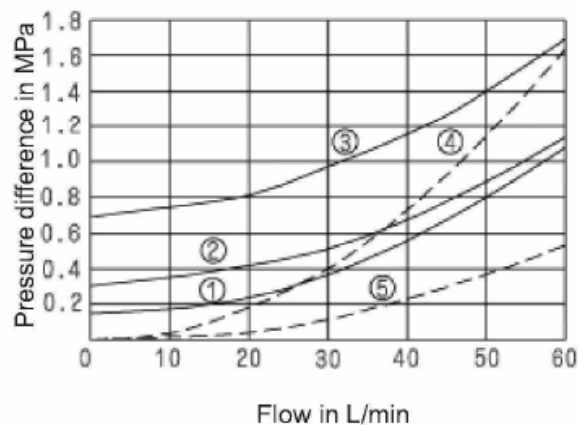
## Characteristic curves (measured at $v = 41 \text{ mm}^2/\text{s}$ and $t = 50 \text{ °C}$ )

### Type Z2S6

— = A1 → A2, B1 → B2

- - - = A2 → A1, B2 → B1

1. Cracking pressure 1=0.15MPa
2. Cracking pressure 2=0.3MPa
3. Cracking pressure 3=0.7MPa
4. Through check valve cartridge
5. Flow freely  
(Without check valve cartridge type "A" and type "B")

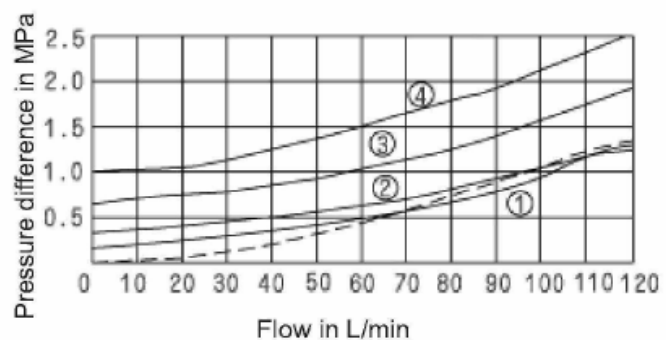


### Type Z2S10

— = A1 → A2, B1 → B2

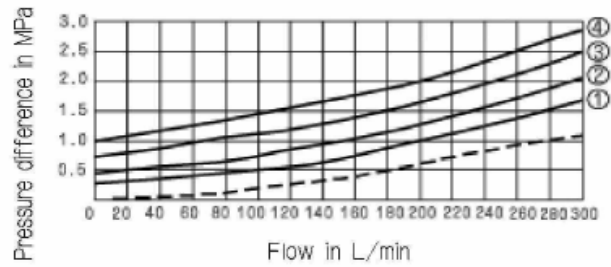
- - - = A2 → A1, B2 → B1

1. Cracking pressure 1=0.15MPa
2. Cracking pressure 2=0.3MPa
3. Cracking pressure 3=0.6MPa
4. Cracking pressure 4=1.0MPa



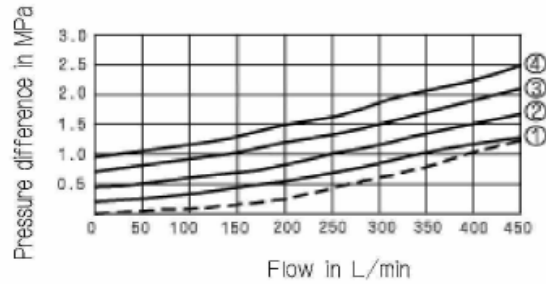
Type Z2S16

— = A1 → A2, B1 → B2  
 - - - = A2 → A1, B2 → B1



Type Z2S22

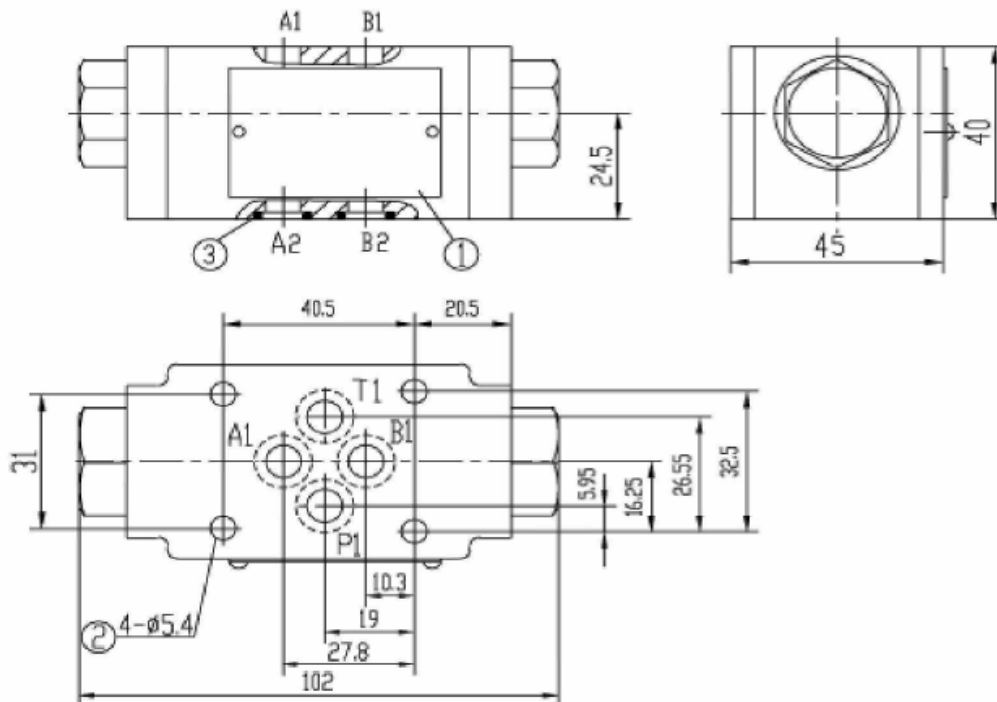
— = A1 → A2, B1 → B2  
 - - - = A2 → A1, B2 → B1



Unit dimensions

(Dimensions in mm)

Size6

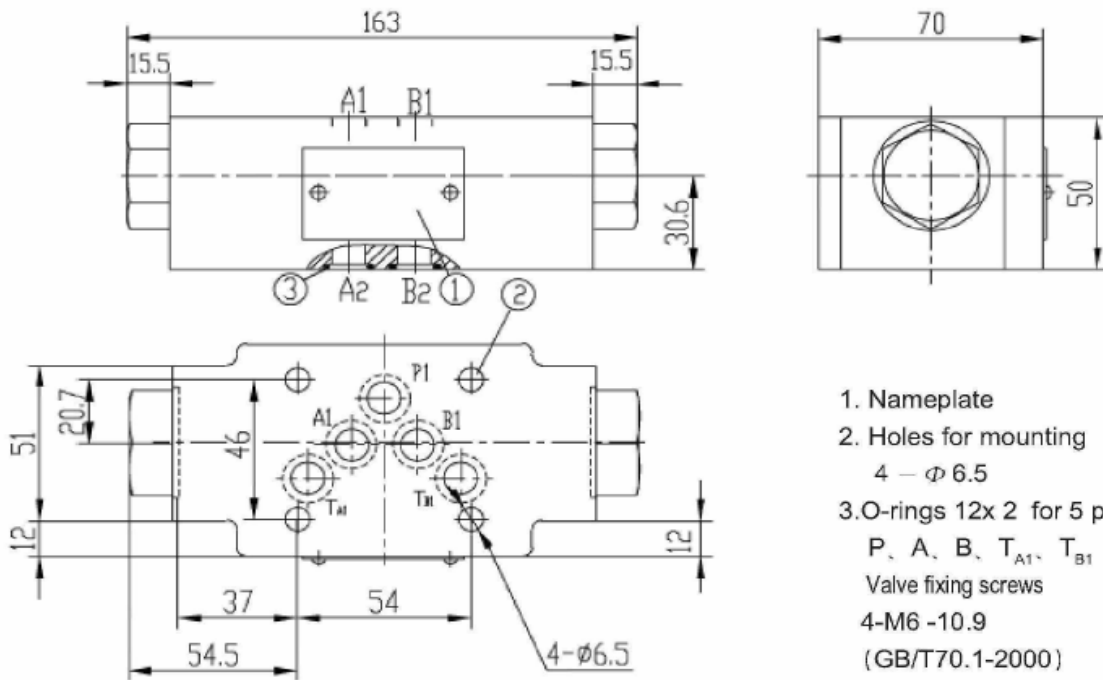


1. Name plate
2. Holes for mounting
3. O-rings 9.25 x 1.78 for four ports  
 Valve fixing screws 4 - M5 -10.9  
 (GB/T70.1-2000)  
 Screw torque:  $M_A = 8.9 \text{ Nm}$

**Unit dimensions**

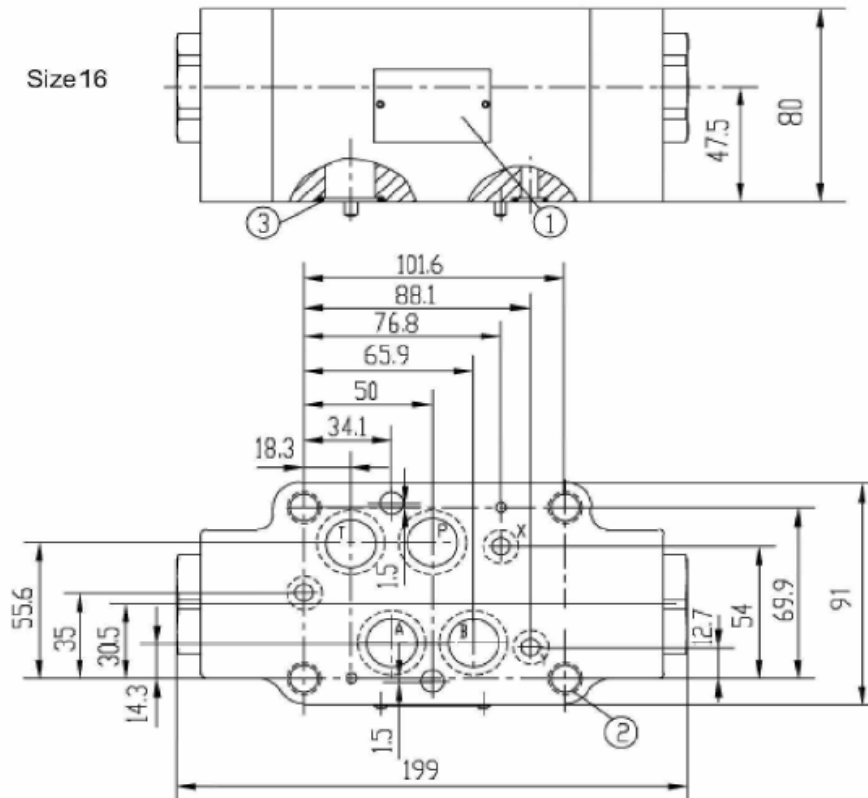
**(Dimensions in mm)**

Size 10



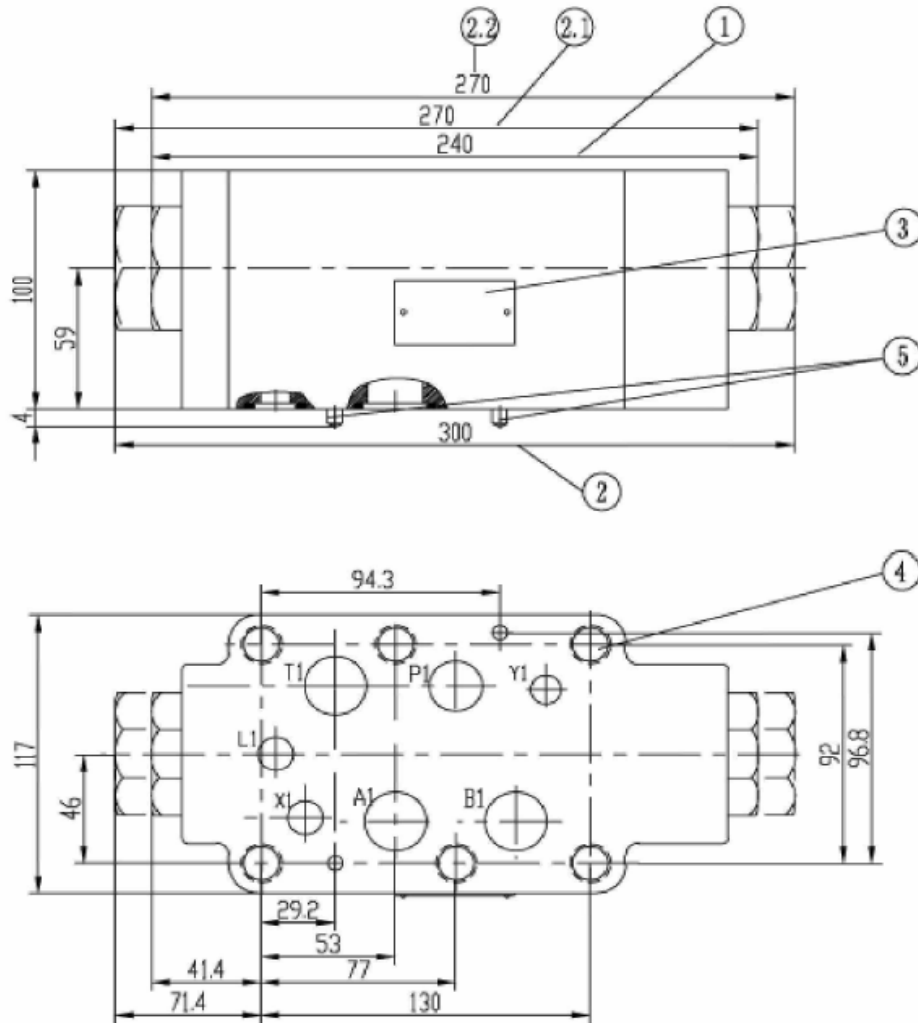
- 1. Nameplate
- 2. Holes for mounting  
4 -  $\phi 6.5$
- 3. O-rings 12x 2 for 5 ports  
P, A, B,  $T_{A1}$ ,  $T_{B1}$   
Valve fixing screws  
4-M6 -10.9  
(GB/T70.1-2000)  
Screw torque:  $M_A=15.5\text{Nm}$

Size 16



- 1. Nameplate
- 2. Holes for mounting
- 3. O-rings 22x 2.5 for ports  
P, A, B, T  
10X2 for ports X, Y, L  
Valve fixing screws:  
① 4-M10 -10.9  
(GB/T70.1-2000)  
Screw torque:  $M_A=75\text{Nm}$   
② 2-M6 -10.9  
(GB/T70.1-2000)  
Screw torque:  $M_A=15.5\text{Nm}$

Size22



- 1 Cracking pressure 0.3MPa or 0.5MPa , Leak free closure of ports A and B
- 2 Cracking pressure 0.75MPa or 1.0MPa , Leak free closure of ports A and B
- 2.1 Cracking pressure 0.75MPa or 1.0MPa , Leak free closure of port A
- 2.2 Cracking pressure 0.75MPa or 1.0MPa , Leak free closure of port B
- 3 Label plate
- 4 Valve fixing screws:  
6- M14-10.9 (GB/T70.1-2000),  
Screw torque: $M_A=205\text{Nm}$
- 5 Fixing pin

Required surface finish of mating piece

